REMARKS

Applicants respectfully request the Examiner to reconsider his rejection of the claims on the references and for the reasons of record.

The claim language of claim 1 (as amended) has been changed to remove the indefinite phrase.

Claim 1 has been rewritten into amended claim 1 to better describe the invention.

Claims 2, 3 and 4 have been withdrawn and new claims 17 has been added.

Applicants accept that GELLEKINK discloses the basic features of a radar tracking system including a Doppler tracking loop. Applicants also accept that BRONIWITZ, et al discloses a tracking system with range and velocity gates, as well as tracking loops to maintain the target system within the gates, but applicants do not claim any such basic system. Applicants do disclose a split-gate range tracker, but such known error-determining arrangements are not part of their invention, nor do they claim them. Similarly, GLASS, et al discloses a radar tracker employing fast Fourier transform means which applicants accept to be known.

Applicants' invention, on the other hand, is concerned in one aspect with the manner and means for determining the error in the target frequency estimation. Applicants do not merely compare the signals in adjacent frequency bins: They construct or simulate two bins, one being formed from the target bin and (say) the bin to the left and the other being formed from the target bin and the bin to the right. They thus construct two bins

which sit astride the estimated target frequency and give a precise zero output if the frequency estimation is correct.

They do not, as in BRONIWITZ, et al, merely accept the lie of the target frequency on the existing bins and compare adjacent target signal components as they happen to occur: They, in effect, arrange their bins to the best and most sensitive effect.

They also arrange that the pair of derived bins slides continuously through the speedgate bandwidth to maintain this relation with the estimated target frequency.

None of the references discloses any such refinement of the error determining process nor indicates it, even if considered as a single document.

It is respectfully submitted that amended claim 1 specifies the above inventive features more clearly.

Claim 17 specifies the particular detailed method of assessing the accuracy of the frequency estimation, by power comparison between the derived bin outputs.

Original claim 5, as now dependent on claim 17 specifies a requirement of the Doppler tracking loop and is inventive taken in conjunction with claims 1 and 17.

Similarly, claim 6 specifies FFT filters which,in conjunction with amended claim 1,provides an inventive combination.

Claim 7 (now dependent upon amended claim 1) specifies a novel and inventive feature in that the various references make no disclosure of adjustable width frequency bins controllable in dependence upon the tracking situation.

Similarly, claim 9 specifies an inventive feature whereby bin width is controlled in dependence upon range.

Claims 8 and 10 specify features which, in combination with those of amended claim 1 and claim 17, provide inventive systems.

Claim 11 specifies an inventive feature whereby the bin width is controlled in dependence upon the target frequency off speedgate center frequency and thus provides an option of good tracking or good discrimination.

Claim 12 specifies the system of amended claim 1 in combination with an angle tracking loop.

Claim 13 specifies a particularly inventive method of determining the presence of a target in a particular frequency bin over a succession of samples, namely, double thresholds which converge to force a determination after a number of samples (pulse returns). No such method is even indicated in any of the references.

Claims 14 and 15 specify novel details of the target confirmation system of Figure 13.

Claim 16 specifies a particularly inventive system of discriminating between single and multiple targets using signal/noise ratios derived in two different ways, one as extracted from sum and difference signals within the target frequency bin and one derived from overall power levels, the ratio of the two SNR's giving the required discrimination. This system is both novel and inventive over all of the cited references.

It is respectfully hoped that the Examiner will, in the light of the foregoing amendments and remarks, find that all of the claims in the case are now in condition for allowance.

Wherefore, such a favorable Action is earnestly solicited.

Respectfully submitted,

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